

including January 21, 2001, and have paid the requisite fee [37 C.F.R. §§ 1.136(a), 1.17(a)(3)].

Kindly amend the application as follows:

IN THE CLAIMS:

Please cancel claims 51 to 75, without prejudice.

Please add claims 76 to 102 as follows:

76. An HLA-DR typing process comprising the steps of:

(a) hybridizing DNA in a sample to be typed to a DNA sequence, said DNA sequence being capable of hybridizing to a polymorphic region of an HLA-DR- β chain locus of the human lymphocyte antigen complex to allow determination of one or more HLA-DR alleles, said polymorphic region being encoded by a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding amino acids 8-14 of said locus;
- (ii) DNA sequences encoding amino acids 26-32 of said locus;
- (iii) DNA sequences encoding amino acids 72-78 of said locus;
- (iv) DNA sequences which are allelic variants of any of the foregoing DNA sequences; and

(v) DNA sequences which are fully complementary to any of the foregoing DNA sequences, and
(b) detecting areas of hybridization between said DNA in said sample and said DNA sequence.

77. An HLA-DR typing process comprising the steps of:

- (a) restricting a first DNA isolated from an individual to be typed with at least one restriction endonuclease;
- (b) size-fractionating said restricted DNA;
- (c) hybridizing said size-fractionated DNA to be typed to a second DNA, said second DNA being capable of hybridizing to a polymorphic region of an HLA-DR- β chain locus of the human lymphocyte antigen complex to allow determination of one or more HLA-DR alleles, said polymorphic region being encoded by a DNA sequence selected from the group consisting of:
 - (i) DNA sequences encoding amino acids 8-14 of said locus;
 - (ii) DNA sequences encoding amino acids 26-32 of said locus;
 - (iii) DNA sequences encoding amino acids 72-78 of said locus;

- (iv) DNA sequences which are allelic variants of any of the foregoing DNA sequences; and
- (v) DNA sequences which are fully complementary to any of the foregoing DNA sequences, and
- (d) detecting areas of hybridization between said size-fractionated DNA and said second DNA.

78. An HLA-DR typing process comprising the steps of:

(a) hybridizing DNA in a sample to be typed to a DNA sequence, said DNA sequence being capable of hybridizing to a polymorphic region of an HLA-DR- β chain locus of the human lymphocyte antigen complex to allow determination of one or more HLA-DR alleles, said polymorphic region being encoded by a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding a majority of the amino acid sequence in a region consisting essentially of amino acids 8-14, 26-32 or 72-78 of a polypeptide sequence coded for by DNA insert DR- β -A, DR- β -B or DR- β -C;
- (ii) DNA sequences which are allelic variants of any of the foregoing DNA sequences; and

(iii) DNA sequences which are fully
complementary to any of the foregoing
sequences, and

(b) detecting areas of hybridization between said DNA
in said sample and said DNA sequence.

79. An HLA-DR typing process comprising the steps of:

(a) restricting a first DNA isolated from an individual
to be typed with at least one restriction endonuclease;

(b) size-fractionating said restricted DNA;

(c) hybridizing said size-fractionated DNA to be typed
to a second DNA, said second DNA being capable of hybridizing to
a polymorphic region of an HLA-DR- β chain locus of the human
lymphocyte antigen complex to allow determination of one or more
HLA-DR alleles, said polymorphic region being encoded by a DNA
sequence selected from the group consisting of:

(i) DNA sequences encoding a majority of the
amino acid sequence in a region
consisting essentially of amino acids 8-
14, 26-32 or 72-78 of a polypeptide
sequence coded for by DNA insert DR-
 β -A, DR- β -B or DR- β -C;

(ii) DNA sequences which are allelic variants of any of the foregoing DNA sequences; and

(iii) DNA sequences which are fully complementary to any of the foregoing sequences, and

(d) detecting areas of hybridization between said size-fractionated DNA and said second DNA.

80. An HLA-DR typing process comprising the steps of:

(a) hybridizing DNA in a sample to be typed to a DNA sequence, said DNA sequence being selected from the group consisting of:

(i) GGGGACACCCGACCACGTTTCTTGAGCTGCTTAAGTCTGAG
TGTCATTTCTCAATGGGACGGAGCGGGTGCGGTTCTTGAGA
GACACTTCCATAACCAGGAGGAGTACGCGCGCTTCGACAGCG
ACGTGGGGGAGTACCGGGCGGTGAGGGAGCTGGGGCGGCCTG
ATGCCGAGTACTGGAACAGCCAGAAGGACCTCCTGGAGCAGA
AGCGGGGCCAGGTGGACAATTACTGCAGACACAACCTACGGGGTTG
TGGAGAGCTTCACAGTGCAGCGGCGAGTCCATCCTCAGGTGACTG
TGTATCCTGCAAGACCCAGCCCCTGCAGCACCACAACCTCCTGGT
CTGCTCTGTGAGTGGTTTCTATCCAGGCAGCATTGAAGTCAGTGG

TTCCGGAACGGCCAGGAAGAGAAGGCTGGGGTGGTGTCCACGGGC
CTGATCCAGAATGGAGACTGGACCTTCCAGACCCTGGTGATGCTA
GAAACATTTCTCGGAGTGGAGAGGTTTACACCTGCCAAGTGGAG
CACCCAAGCGTAACGAGCCCTCTCACAGTGGAATGGAGTGCACGG
TCTGAATCTGCACAGAGCAAGATGCTGAGTGGAGTCGGGGGCTTT
GTGCTGGGCCTGCTCTTCCTTGGGGCCGGGCTGTTTCATCTACTTC
AGGAATCAGAAAGGACACTCTGGACTTCAGCCAACAGGATTCCTG
AGC;

(ii) GGGGACACCCGACCACGTTTCTTGGAGCAGGTAAACATGAGTGT
CATTTCTTCAACGGGACGGAGCGGGTGCGGTTCTGGACAGATAC
TTCTATCACCAAGAGGAGTACGTGCGCTTCGACAGCGACGTGGGG
GAGTACCGGGCCGTGACGGAGCTGGGGCGGCCTGATGCCGAGTAC
TGGAACAGCCAGAAGGACCTCCTGGAGCAGAAGCGGGCCGCGGTG
GACACCTACTGCAGACACAACCTACGGGGTTGGTGAGAGCTTCACA
GTGCAGCGGCGAGTCTATCCTGAGGTGACTGTGTATCCTGCAAAG
ACCCAGCCCCTGCAGCACCACAACCTCCTGGTCTGCTCTGTGAAT
GGTTTCTATCCAGGCAGCATTGAAGTCAGGTGGTTCCGGAACGGC
CAGGAAGAGAAGACTGGGGTGGTGTCCACAGGCCTGATCCAGAAT
GGAGACTGGACCTTCCAGACCCTGGTGATGCTGGAAACAGTTCCT
CGGAGTGGAGAGGTTTACACCTCCCAAGTGGAGCACCCAAGCCTG
ACGAGCCCTCTCACAGTGGAATGGAGAGCACGGTCTGAATCTGCA
CAGAGCAAGATGCTGAGTGGAGTCGGGGGCTTCGTGCTGGGCCTG
CTCTTCCTTGGGGCCGGGCTGTTTCATCTACTTCAGGAATCAG

AAAGGACACTCTGGACTTCAGCCAACAGGATTCCTGAGC;

(iii) a DNA sequence which is fully complementary to the DNA sequence of (I) or (ii); and

(iv) a DNA sequence which differs from the DNA sequence of (I) or (ii) in codon sequence due to the degeneracy of the genetic code, and

(b) detecting areas of hybridization between said DNA in said sample and said DNA sequence.

81. An HLA-DR typing process comprising the steps of:

(a) restricting a first DNA isolated from an individual to be typed with at least one restriction endonuclease;

(b) size-fractionating said restricted DNA;

(c) hybridizing said size-fractionated DNA to be typed to a second DNA, said second DNA being selected from the group consisting of:

(i) GGGGACACCCGACCACGTTTCTTGGAGCTGCTTAAGTCTGAG
TGTCATTTCTCAATGGGACGGAGCGGGTGCGGTTTCCTGGAGA
GACACTTCCATAACCAGGAGGAGTACGCGCGCTTCGACAGCG
ACGTGGGGGAGTACCGGGCGGTGAGGGAGCTGGGGCGGCCTG
ATGCCGAGTACTGGAACAGCCAGAAGGACCTCCTGGAGCAGA

AGCGGGGCCAGGTGGACAATTACTGCAGACACAACCTACGGGGTTG
 TGGAGAGCTTCACAGTGCAGCGGCGAGTCCATCCTCAGGTGACTG
 TGTATCCTGCAAGACCCAGCCCCCTGCAGCACCACAACCTCCTGGT
 CTGCTCTGTGAGTGGTTTCTATCCAGGCAGCATTGAAGTCAGTGG
 TTCCGGAACGGCCAGGAAGAGAAGGCTGGGGTGGTGTCCACGGGC
 CTGATCCAGAATGGAGACTGGACCTTCCAGACCCTGGTGATGCTA
 GAAACATTTCTCGGAGTGGAGAGGTTTACACCTGCCAAGTGGAG
 CACCCAAGCGTAACGAGCCCTCTCACAGTGGAAATGGAGTGCACGG
 TCTGAATCTGCACAGAGCAAGATGCTGAGTGGAGTCGGGGGCTTT
 GTGCTGGGCCTGCTCTTCCTTGGGGCCGGGCTGTTTCATCTACTTC
 AGGAATCAGAAAGGACACTCTGGACTTCAGCCAACAGGATTCCTG
 AGC;

(ii) GGGGACACCCGACCACGTTTCTTGGAGCAGGTAAACATGAGTGT
 CATTTCTTCAACGGGACGGAGCGGGTGCGGTTCTTGACAGATAC
 TTCTATCACCAAGAGGAGTACGTGCGCTTCGACAGCGACGTGGGG
 GAGTACCGGGCCGTGACGGAGCTGGGGCGGCCTGATGCCGAGTAC
 TGGAACAGCCAGAAGGACCTCCTGGAGCAGAAGCGGGCCGCGGTG
 GACACCTACTGCAGACACAACCTACGGGGTTGGTGAGAGCTTCACA
 GTGCAGCGGCGAGTCTATCCTGAGGTGACTGTGTATCCTGCAAAG
 ACCCAGCCCCTGCAGCACCACAACCTCCTGGTCTGCTCTGTGAAT
 GGTTTCTATCCAGGCAGCATTGAAGTCAGGTGGTTCCGGAACGGC
 CAGGAAGAGAAGACTGGGGTGGTGTCCACAGGCCTGATCCAGAAT
 GGAGACTGGACCTTCCAGACCCTGGTGATGCTGGAAACAGTTCCT

CGGAGTGGAGAGGTTTACACCTCCCAAGTGGAGCACCCAAGCCTG
ACGAGCCCTCTCACAGTGGGAATGGAGAGCACGGTCTGAATCTGCA
CAGAGCAAGATGCTGAGTGGAGTCGGGGGCTTCGTGCTGGGCCTG
CTCTTCCTTGGGGCCGGGCTGTTCATCTACTTCAGGAATCAG
AAAGGACACTCTGGACTTCAGCCAACAGGATTCCTGAGC;

- (iii) a DNA sequence which is fully complementary to the DNA sequence of (I) or (ii); and
- (iv) a DNA sequence which differs from the DNA sequence of (I) or (ii) in codon sequence due to the degeneracy of the genetic code, and

(d) detecting hybridization between said size-fractionated DNA and said second DNA.

82. An HLA-DR typing process comprising the steps of:

(a) hybridizing DNA in a sample to be typed to a DNA sequence, said DNA sequence being capable of hybridizing to a constant region of an HLA-DR- β chain locus of the human lymphocyte antigen complex, said constant region being encoded by a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding amino acids 39-45 of said locus; and

(ii) DNA sequences which are fully complementary to any of the foregoing DNA sequences, and
(b) detecting areas of hybridization between said DNA in the sample and said DNA sequence.

83. An HLA-DR typing process comprising the steps of:
(a) restricting a first DNA isolated from an individual to be typed with at least one restriction endonuclease;
(b) size-fractionating said restricted DNA;
(c) hybridizing said size-fractionated DNA to be typed to a second DNA, said second DNA being capable of hybridizing to a constant region of an HLA-DR- β chain locus of the human lymphocyte antigen complex, said constant region being encoded by a DNA sequence selected from the group consisting of:

(i) DNA sequences encoding amino acids 39-45 of said locus; and
(ii) DNA sequences which are fully complementary to any of the foregoing DNA sequences, and
(d) detecting areas of hybridization between said size-fractionated DNA and said second DNA.

84. An HLA-DR typing process comprising the steps of:

(a) hybridizing DNA in a sample to be typed to a DNA sequence, said DNA sequence being capable of hybridizing to a constant region of an HLA-DR- β chain locus of the human lymphocyte antigen complex, said constant region being encoded by a DNA sequence selected from the group consisting of:

(i) DNA sequences encoding a majority of the amino acid sequence in a region consisting essentially of amino acids 39-45 of a polypeptide sequence coded for by DNA insert DR- β -A, DR- β -B or DR- β -C; and

(ii) DNA sequences which are fully complementary to any of the foregoing sequences, and

(b) detecting areas of hybridization between said DNA in the sample and said DNA sequence.

85. An HLA-DR typing process comprising the steps of:

(a) restricting a first DNA isolated from an individual to be typed with at least one restriction endonuclease;

(b) size-fractionating said restricted DNA;

(c) hybridizing said size-fractionated DNA to be typed to a second DNA, said second DNA being capable of hybridizing to a constant region of an HLA-DR- β chain locus of the human

lymphocyte antigen complex, said constant region being encoded by a DNA sequence selected from the group consisting of:

(i) DNA sequences encoding a majority of the amino acid sequence in a region consisting essentially of amino acids 39-45 of a polypeptide sequence coded for by DNA insert DR- β -A, DR- β -B or DR- β -C; and

(ii) DNA sequences which are fully complementary to any of the foregoing sequences, and

(d) detecting areas of hybridization between said DNA to be typed and said second DNA.

86. The HLA-DR typing process according to claim 76 or 78, wherein said DNA sequence is characterized by a nucleotide sequence selected from the group consisting of:

TGGAGCTGCTTAAGTCTGA, TCCTGGAGAGACACTTCCA,
GGGGCCAGGTGGACAATTA, TGGAGCAGGTAAACATGA, TCCTGGACAGATACTTCTA
and GGGCCGCGGTGGACACCTA.

87. The HLA-DR typing process according to claim 77 or 79, wherein said second DNA is characterized by a nucleotide sequence selected from the group consisting of:

TGGAGCTGCTTAAGTCTGA, TCCTGGAGAGACACTTCCA, GGGGCCAGGTGGACAATTA,
TGGAGCAGGTTAAACATGA, TCCTGGACAGATACTTCTA and GGGCCGCGGTGGACACCTA.

88. The HLA-DR typing process according to any one of claims 76, 78, 80, 82 or 84, further comprising the step of comparing said hybridization to hybridization between DNA of known HLA-DR type and said DNA sequence.

89. The HLA-DR typing process according to any one of claims 77, 79, 81, 83 or 85, further comprising the step of comparing said hybridization to hybridization between DNA of known HLA-DR type and said second DNA.

90. The HLA-DR typing process according to any one of claims 76, 78, 80, 82 or 84, wherein prior to the step of detecting said areas of hybridization, the process further comprises the step of hybridizing said DNA in said sample to a hybridization control, said hybridization control being a DNA having the nucleotide sequence: GCTTCGACAGCGACGTGGG.

91. The HLA-DR typing process according to any one of claims 77, 79, 81, 83 or 85, wherein prior to the step of detecting said areas of hybridization, the process further

comprises the step of hybridizing said size-fractionated DNA to a hybridization control, said hybridization control being a DNA having the nucleotide sequence: GCTTCGACAGCGACGTGGG.

92. The HLA-DR typing process according to any one of claims 76, 78, 80, 82 or 84, wherein said DNA sequence is a labeled DNA sequence and its label is used for detecting hybridization between said DNA in said sample and said DNA sequence.

93. The HLA-DR typing process according to any one of claims 77, 79, 81, 83 or 85, wherein said second DNA is a labeled DNA and its label is used for detecting hybridization between said size-fractionated DNA and said second DNA.

94. An HLA-DR typing kit comprising a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding amino acids 8-14 of an HLA-DR- β chain locus of the human lymphocyte antigen complex;
- (ii) DNA sequences encoding amino acids 26-32 of an HLA-DR- β chain locus of the human lymphocyte antigen complex;

- (iii) DNA sequences encoding amino acids 72-78 of an HLA-DR- β chain locus of the human lymphocyte antigen complex;
- (iv) DNA sequences which are allelic variants of any of the foregoing DNA sequences; and
- (v) DNA sequences which are fully complementary to any of the foregoing DNA sequences.

95. An HLA-DR typing kit comprising a DNA sequence which hybridizes to an HLA-DR- β chain locus of the human lymphocyte antigen complex, said DNA sequence being capable of hybridizing to a polymorphic region of said locus to allow determination of one or more HLA alleles for use in HLA-DR- β typing, said polymorphic region being encoded by a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding amino acids 8-14 of said locus;
- (ii) DNA sequences encoding amino acids 26-32 of said locus;
- (iii) DNA sequences encoding amino acids 72-78 of said locus;
- (iv) DNA sequences which are allelic variants of any of the foregoing DNA sequences; and

- (v) DNA sequences which are fully complementary to any of the foregoing DNA sequences.

96. An HLA-DR typing kit comprising a DNA sequence which hybridizes to an HLA-DR- β chain locus of the human lymphocyte antigen complex, said DNA sequence being capable of hybridizing to a polymorphic region of said locus to allow determination of one or more HLA alleles for use in HLA-DR- β typing, said polymorphic region being encoded by a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding a majority of the amino acid sequence in a region consisting essentially of amino acids 8-14, 26-32 or 72-78 of a polypeptide sequence coded for by DNA insert DR- β -A, DR- β -B or DR- β -C;
- (ii) DNA sequences which are allelic variants of any of the foregoing DNA sequences; and
- (iii) DNA sequences which are fully complementary to any of the foregoing sequences.

97. The HLA-DR typing kit according to any one of claims 94, 95 or 96, wherein said DNA sequence is labeled.

98. The HLA-DR typing kit according to any one of claims 94, 95 or 96, further comprising a 19-mer hybridization control, said hybridization control being a DNA having the nucleotide sequence: GCTTCGACAGCGACGTGGG.

99. An HLA-DR typing kit comprising a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding amino acids 39-45 of an HLA-DR- β locus of the human lymphocyte antigen complex, and
- (ii) DNA sequences which are fully complementary to any of the foregoing DNA sequences.

100. An HLA-DR typing kit comprising a DNA sequence which hybridizes to an HLA-DR- β chain locus of the human lymphocyte antigen complex, said DNA sequence being capable of hybridizing to a conserved region of said locus to allow determination of a HLA-DR- β chain for use in HLA-DR- β typing, said conserved region being encoded by a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding amino acids 39-45 of said locus, and

- (ii) DNA sequences which are fully complementary to any of the foregoing DNA sequences.

101. An HLA-DR typing kit comprising a DNA sequence which hybridizes to an HLA-DR- β chain locus of the human lymphocyte antigen complex, said DNA sequence being capable of hybridizing to a conserved region of said locus to allow determination of a HLA-DR- β chain for use in HLA-DR- β typing, said conserved region being encoded by a DNA sequence selected from the group consisting of:

- (i) DNA sequences encoding a majority of the amino acid sequence in a region consisting essentially of amino acids 39-45 of a polypeptide sequence coded for by DNA insert DR- β -A, DR- β -B or DR- β -C, and
- (ii) DNA sequences which are fully complementary to any of the foregoing sequences.

102. The HLA-DR typing kit according to any one of claims 99, 100 or 101, wherein said DNA sequence is labeled.

REMARKS

The Claim Amendments